# Preliminary Assessment

American Cyanamid Company
Warners Plant
Tremely Point Road
Linden, Union County, New Jersey

EPA ID# NJD002173144

EPA

# POTENTIAL HAZARDOUS WASTE SITE
## IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION: II | SITE NUMBER (to be assigned by Hq): NJ 02940

**NOTE:** This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

**GENERAL INSTRUCTIONS:** Complete Sections I and III through X as completely as possible before Section II *(Preliminary Assessment)*. File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

## I. SITE IDENTIFICATION

A. SITE NAME: American Cyanamid Co.

B. STREET *(or other identifier)*: Foot of Tremley Pt. Rd.

C. CITY: Linden

D. STATE: NJ

E. ZIP CODE: 07036

F. COUNTY NAME: Union

G. OWNER/OPERATOR *(if known)*

1. NAME: American Cyanamid — P. O. Box 31, Linden, NJ 07036

2. TELEPHONE NUMBER: 201-862-6000

H. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION: 25 acre inactive landfill. The site has been encapsulated and the site is fenced.

J. HOW IDENTIFIED *(i.e., citizen's complaints, OSHA citations, etc.)*:

K. DATE IDENTIFIED *(mo., day, & yr.)*: 9-11-80

L. PRINCIPAL STATE CONTACT

1. NAME:

2. TELEPHONE NUMBER:

## II. PRELIMINARY ASSESSMENT *(complete this section last)*

A. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☒ 4. NONE ☐ 5. UNKNOWN

B. RECOMMENDATION

☒ 1. NO ACTION NEEDED *(no hazard)*

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:

☐ 4. SITE INSPECTION NEEDED *(low priority)*

C. PREPARER INFORMATION

1. NAME: Carole Petersen

2. TELEPHONE NUMBER: 264-1573

3. DATE *(mo., day, & yr.)*: 3-30-81

## III. SITE INFORMATION

A. SITE STATUS

☐ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)*

☒ 2. INACTIVE *(Those sites which no longer receive wastes.)*

☐ 3. OTHER *(specify)*: *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)*

B. IS GENERATOR ON SITE?

☐ 1. NO ☒ 2. YES *(specify generator's four-digit SIC Code)*:

C. AREA OF SITE *(in acres)*: 25

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES

1. LATITUDE *(deg.-min.-sec.)*:

2. LONGITUDE *(deg.-min.-sec.)*:

E. ARE THERE BUILDINGS ON THE SITE?

☒ 1. NO ☐ 2. YES *(specify)*:



Continue On Reverse

Continued From Page 2

## V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE *(place in descending order of hazard).*

Cyanuric Chloride
Calcium cyanide
Pesticide (NDS) filters
vanadium pentoxide

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

Site does not appear to pose a health hazard.
Groundwater is not used for drinking in this area.

## VI. HAZARD DESCRIPTION

| A. TYPE OF HAZARD | B. POTENTIAL HAZARD *(mark 'X')* | C. ALLEGED INCIDENT *(mark 'X')* | D. DATE OF INCIDENT *(mo., day, yr.)* | E. REMARKS |
|---|---|---|---|---|
| 1. NO HAZARD | | | | |
| 2. HUMAN HEALTH | | | | |
| 3. NON-WORKER INJURY/EXPOSURE | | | | |
| 4. WORKER INJURY | | | | |
| 5. CONTAMINATION OF WATER SUPPLY | | | | |
| 6. CONTAMINATION OF FOOD CHAIN | | | | |
| 7. CONTAMINATION OF GROUND WATER | | | | |
| 8. CONTAMINATION OF SURFACE WATER | | | | |
| 9. DAMAGE TO FLORA/FAUNA | | | | |
| 10. FISH KILL | | | | |
| 11. CONTAMINATION OF AIR | | | | |
| 12. NOTICEABLE ODORS | | | | |
| 13. CONTAMINATION OF SOIL | | | | |
| 14. PROPERTY DAMAGE | | | | |
| 15. FIRE OR EXPLOSION | | | | |
| 16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS | | | | |
| 17. SEWER, STORM DRAIN PROBLEMS | | | | |
| 18. EROSION PROBLEMS | | | | |
| 19. INADEQUATE SECURITY | | | | |
| 20. INCOMPATIBLE WASTES | | | | |
| 21. MIDNIGHT DUMPING | | | | |
| 22. OTHER *(specify):* | | | | |



Continue On Reverse

# EPA POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION

| REGION | SITE NUMBER |
|---|---|
| II | NJ0000294D |

**NOTE:** The initial identification of a potential site or incident should not be interpreted as a finding of illegal activity or confirmation that an actual health or environmental threat exists. All identified sites will be assessed under the EPA's Hazardous Waste Site Enforcement and Response System to determine if a hazardous waste problem actually exists.

| A. SITE NAME | B. STREET (or other identifier) | | |
|---|---|---|---|
| American Cyanamid | Foot of Tremey Pt Rd | | |
| **C. CITY** | **D. STATE** | **E. ZIP CODE** | **F. COUNTY NAME** |
| Linden | NJ | | Union |

**G. OWNER/OPERATOR** *(if known)*

1. NAME

2. TELEPHONE NUMBER

**H. TYPE OF OWNERSHIP** *(if known)*

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

**I. SITE DESCRIPTION**

**J. HOW IDENTIFIED** *(i.e., citizen's complaints, OSHA citations, etc.)*

**K. DATE IDENTIFIED** *(mo., day, & yr.)*

**L. SUMMARY OF POTENTIAL OR KNOWN PROBLEM**

**M. PREPARER INFORMATION**

| 1. NAME | 2. TELEPHONE NUMBER | 3. DATE (mo., day, & yr.) |
|---|---|---|
| Richard Ramon | (212)-264-1573 | 9-11-80 |

EPA Form 2070-8 (5-80)

# HAZARDOUS WASTE SITE STATUS

Name & Address
American Cyanamid
Foot of Tremley Pt Rd
Linden, NJ

Site Number
NJ0000802940

Staff Responsible
R. Ramon

County
Union

Agency Responsible
✓ EPA ____ State ____ None

Preliminary Assessment Rating

Date of Assessment

Tentative Disposition

Date of Disposition

Site Inspection Requested ____ Yes ____ No

Date of Request

Date of Inspection

Date of Report

Site Inspection Rating

JRB Rating

Sampling Requested ____ Yes ____ No

Date of Request

Date of Sampling

Date of Report

Final Strategy Determination -
(based on sampling results)

Date of Determination

Enforcement by EPA ____ Yes ____ No

Date of Case Development Plan

Enforcement Team Leader

Technical Staff -

Legal Staff -

S&A Field Staff -

FIT Staff -

Enforcement Case Filed Date

Administrative Order Issued Date

AMERICAN CYANAMID COMPANY
WARNERS PLANT
TREMELY POINT ROAD
LINDEN, UNION COUNTY, NEW JERSEY
EPA ID NJD 002173144

GENERAL INFORMATION AND SITE HISTORY

The American Cyanamid Warners Plant was established in 1916 on a swampy thirty two acres located in the southeast corner of the City of Linden. The previous owner of this parcel, the Ammo-Phos Corporation, had been in operation since the 1870s, and, upon purchase, Cyanamid utilized existing buildings and operating areas. The facility is bounded to the east by the Arthur Kill, to the south by the Rahway River, and to the north and west by Cities Services Company property. Land use within a one mile radius of the facility is predominantly industrial. The nearest residential development occurs approximately 3500 feet across the Arthur Kill in Staten Island, New York.

SITE OPERATIONS OF CONCERN

The Warners Plant is the second oldest manufacturing plant in the American Cyanamid Company and is the location of Cyanamid's first research laboratory where many of the company's products were developed. The plant has produced a variety of organic and inorganic chemicals which include sulfuric acid, acrylamide, polyacrylamide, surfactants, water and wastewater treatment chemicals, paper and fabric treatment chemicals, mining and ore production chemicals, and non-persistant organophosphate insecticides. Current products include Malathion, surfactants, and mining products. Processing operations take place as both continuous and batch operations. Some buildings and tanks are located on piers which extend out over the Arthur Kill and the Rahway River.

Hazardous wastes which are generated on site are treated and/or stored in tanks and containers prior to shipment off site to an authorized facility. Containerized hazardous wastes are held for less than ninety days at six accumulation areas throughout the plant nearby the separate production areas. These wastes typically include floor sweepings, spent filters and filter cakes, product spillage cleanup debris, and discarded contaminated equipment. At the time of a June 1987 visual site inspection, the RCRA regulated container storage area was located in Building 76, the former alum production plant. At that time the building was observed to be in very poor condition, with large holes in the roof and walls. The drums, although stored on pallets, were within standing pools of water with no secondary containment present. A subsequent inspection conducted in December 1987 by NJDEP/DHWM Metro Field Office representatives indicated similar conditions to still be present. Both hazardous and non-hazardous wastes were stored together and in some cases could not be distinguished because they were not labeled. Poor aisle space was maintained. One drum was completely eaten through by corrosion, exposing its contents. Another drum was observed with a puncture hole in its side. Other drums were observed that were not completely closed.

The Warners Plant has proposed moving its hazardous waste containerized storage from Building 76 to Building 125. This plan is currently under review by NJDEP/Bureau of Hazardous Waste Engineering.

Hazardous wastes that are typically treated and stored in tanks are the process effluents from chemical productions and may include process wastes, spent process chemicals, process equipment washouts, floor washings, and pollution control equipment effluents. Seven tanks operate under interim status storage and treatment authorization. Three of these tanks handle production process effluents and possess permit by rule status as Industrial Waste Management Facilities (IWMF). Two tanks are empty while the remaining two (TA-3, TA-5), as treatment and storage units, are RCRA regulated, with a total capacity of 220,000 gallons. Process waste effluent is routed to the individual treatment and storage tanks by separate headers, each designed to carry individual waste streams. Adequate secondary containment is provided for tank TA-5, however, the containment for TA-3 which has a volume of 120,000 gallons has an effective capacity of 60,000 gallons. This containment is scheduled to be upgraded.

The Warners Plant utilizes ten underground storage tanks for the storage of raw materials and fuel. The total storage capacity is 124,735 gallons. The storage capacities and contents are indicated below:

| TANK NO. | AGE (years) | CAPACITY (gallons) | CONTENTS |
|---|---|---|---|
| E1 | 14 | 4000 | unleaded gasoline |
| E2 | 14 | 4000 | Diesel fuel |
| E3 | 9 | 15000 | cyclohexanone |
| E4 | 9 | 15000 | 75% solvent (Tennaco 500) |
| E5 | 23 | 14835 | xylene |
| E6 | 23 | 14400 | isobutyl alcohol |
| E7 | 10 | 14400 | denatured ethyl alcohol with 0.5% toluene |
| E8 | 10 | 14400 | denatured ethyl alcohol with 0.5% toluene |
| E9 | 10 | 14400 | denatured ethyl alcohol with 0.5% toluene |
| E10 | 10 | 14400 | denatured ethyl alcohol with 0.5% toluene |

These are all single walled tanks with no internal lining. With the exception of Tanks E1 and E2, these tanks are enclosed within vaults with monitoring equipment within the secondary containment.

The Warners Plant is currently operating under RCRA interim status as an existing facility.

The facility has an extensive history of spills and releases. These are outlined as follows:

1. On September 17, 1975, and on March 5, 1976, approximately 100 gallons of organic effluent was spilled into Arthur Kill while being loaded onto a barge for ocean disposal. The spill was not contained.

2. On August 17, 1976, a tank car containing 1970 gallons of 50% sulfuric acid began to leak onto the ground. It is estimated that 135 gallons leaked onto the ground and was neutralized with soda ash.

3. On September 5, 1976, a plume approximately ten (10) feet wide of purple foam was observed extending into the Rahway River from the rear of the plant as well as gathering on mud flats behind the facility. The purple foam was the result of a broken chlorine injector.

4. On February 17, 1978, 16,000 to 20,000 gallons of sulfuric acid mixed with water was released to the Arthur Kill through a ruptured pipeline.

5. On October 31, 1978, approximately 1600 gallons of a mixture of dimethyldithiophosphoric acid (60%) and toluene (40%) was released to the Rahway River near its confluence with the Arthur Kill. The discharge was the result of an overflow during a transfer operation. Spillage entered a floor drain which discharged directly to the river. It was not possible to contain or remove the material.

6. On May 1, 1980, a valve pipe failed allowing approximately 1900 gallons of sulfuric acid to flow to the Rahway River. This incident occurred during dismantling of old acid storage tanks.

7. On June 11, 1980, American Cyanamid was issued a Notice of Prosecution due to the use of three (3) tanks (TA-40, TA-41, TA-42) without conforming to all conditions and provisions of the permit, as well as a Notice of Prosecution for the installation and use of a storage tank without obtaining a permit.

8. On June 20, 1980, odor complaints were received from residents of Staten Island. The source of the odors was verified to be from a leaking pump on Tank TA-2.

9. In November 1980, a mixture of 8% acrylonitrile and 28% acrylamide discharged to the Arthur Kill at a rate of approximately 2000 pounds per day for an indeterminant amount of time. This discharge through outfall 00D was due to a leaking heat exchanger in the Acrylamide Department.

10. On January 12, 1981, 550 gallons of mixed acid (sulfuric acid and nitric acid) dripped onto the ground at storage tank V-12 in the Sulfuric Acid Department. Soda ash, which was used to neutralize the spill, and some gravel were reportedly removed by Cyanamid.

11. On January 18, 1981, an estimated 30 tons of 98% sulfuric acid dripped onto the ground in an area located approximately ten (10) feet from the Arthur Kill. Soda ash was used to neutralize the spill.

12. On March 18, 1981, 80 gallons of 93% sulfuric acid leaked onto the ground due to a leak in storage tank TA-6. Soda ash was added to neutralize the spill.

13. On March 24, 1981, 400 gallons of No. 6 fuel oil entered the Arthur Kill due to a leak in a recirculation line. Booms were deployed and the spill was contained. It is unknown if any of the oil escaped into the Arthur Kill. No. 6 fuel oil was used in an existing incinerator.

14. On August 7, 1981, 300 gallons of 20% oleum was dispersed into the Arthur Kill due to overflow of Tank TA-2.

15. On September 17, 1981, approximately 50 gallons of No. 6 fuel oil leaked from a heat exchanger and accumulated in a manhole. It was subsequently discharged via outfall 00D and was believed to be contained by a permanent boom.

16. On March 25, 1982, 2130 pounds (150 gallons) of 77% sulfuric acid was discharged to a gravel covered area surrounding Tank V-19 due to a check valve malfunction. The spill was neutralized with water and sodium carbonate.

17. On July 11, 1982, an estimated 8.3 tons of 99% sulfuric acid was discharged due to overfilling from Tank V-20. The acid is believed to have seeped through pourous limestone fill to the Arthur Kill located approximately twenty (20) feet away. Additionally a sink hole exists five (5) feet from a tank. Brown staining of the Arthur Kill was observed. The EPA initiated a civil action against American Cyanamid in response to this incident.

18. On July 21, 1982, Cyanamid was issued a Notice of Prosecution for the operation and installation of three (3) feed tanks (144B, 146B, and 148B) without obtaining a permit.

19. On July 27 and 28, 1982, the Middlesex County Health Department (MCHD), together with the New York Department of Environmental Conservation investigated a series of odor (garlic/onion) complaints believed to be originating from the Cyanamid Plant. The source was believed to be a leaking gasket occurring during transfer operations.

20. On December 7, 1982, 188 gallons of 50% caustic soda solution spilled from storage tank TA-23 located north of Building 46. Absorbent was applied and some contaminated soil was removed.

21. On February 2, 1983, MCHD issued a Notice of Violation regarding the No. 2 flare at Building 69 due to emissions of hydrogen sulfide. Extensive odor complaints had been received from all surrounding towns.

22. In March 1983, the NJDEP received an anomynous complaint alleging ongoing deliberate dumping to the Arthur Kill from acid concentration towers. This allegation was not verified during subsequent inspections.

23. On April 6, 1983, an estimated 100 gallons of 20% oleum, which is equivalent to 1670 pounds of 99% sulfuric acid, overflowed from a tank

wagon at the Sulfuric Acid Department. Most of the material was spilled onto the ground however some reached a nearby storm drain. Soda ash was applied and residuals and gravel were collected for disposal in a secure landfill.

24. On August 26, 1983, Trenton Dispatch received a complaint regarding a dense fog/cloud of sulfuric acid resulting in complaints of illness from three (3) workers in a nearby company. The cause of the release was a plant start up at American Cyanamid.

25. On October 4, 1983, an estimated 50 gallons of 12% acrylamide solution (equivalent to 52 pounds of acrylamide) overflowed from a reactor in Building 125 and spilled onto the ground off of a roof. Cyanamid officials reported the decontamination of the area and disposal of residuals to a secure landfill.

26. On November 15, 1983, the overheating of Reactor 150-4 located in Building 123 caused a rupture disc to burst. This caused the release of 500 gallons of methyl bis acrylamide (MBA) to the atmosphere. MBA is a final product whose constituents are sulfuric acid, para formaldehyde and acrylonitrile. The product was released as a mist which settled nearby. The material was adsorbed with sand and collected in drums.

27. On January 4, 1984, Cyanamid was issued a Notice of Prosecution for fugitive emissions of Dimethylphosphorochloridothionate from Tank TA 140-11.

28. On January 22, 1984, an estimated 350 gallons of 50% acrylamide solution (equivalent to 1500 pounds of acrylamide) spilled from a reactor in Building 125 to the surrounding ground due to an open valve. An estimated 20 gallons (150 pounds of acrylamide) reached a nearby storm drain. An absorbant was added and the material was collected for disposal at a secure landfill.

29. On May 21, 1984, an estimated 690 gallons of 50% sodium hydroxide (equivalent to 4400 pounds of 100% sodium hydroxide) leaked from a circulating line on a storage tank at Building 125. The spilled material was absorbed with sand and drummed for disposal in a secure landfill.

30. On July 15, 1984, 2000 pounds (275 gallons) of toluene spilled onto the ground during a transfer from the Building 69 tank farm area to Building 69. Contaminated soil was removed and drummed for disposal in a secure landfill. This leak was reported to be ongoing for possibly two (2) days, with an unknown amount entering the Rahway River.

31. On October 6, 1984, there was a major release of Malathion resulting from an eruption of storage tank TA-3. This eruption caused a heavy vapor mist to be released to the air, falling back to earth and into the Rahway River, Arthur Kill and adjoining shoreline. Additionally, this eruption caused the Malathion to spill to a tar lot, then to a grassy area along the Rahway River and eventually to both the Arthur Kill and Rahway River. It is estimated that approximately 6500

gallons of Malathion was released from the tank to the adjoining shoreline.

The United States Coast Guard estimated 1000 pounds (100 gallons) of Malathion entered the waterways due to the observation of a milky white discoloration in the Rahway River which covered an area of approximately sixty (60) yards by three (3) yards. Twenty nine crew members from passing ships were directly exposed and hospitalized.

The tank fumed vigorously for over two (2) hours and the fumes were carried by the wind in a southerly direction. The cloud was visible as far south as the Raritan Bay and the mercaptan odor was detected in Monmouth County, at a distance of approximately twenty (20) miles. Area hospitals reported the complaints of over one hundred people, complaints common to symtoms of Malathion exposure. At least 160 people were hospitalized in New York.

Swabs of the surrounding communities were taken by the Middlesex County Health Department. Test results indicated that the highest levels were encountered within two (2) miles of the plant. On the following day, levels of Malathion as high as 1480 parts per billion (ppb) were measured in the Rahway River. The breakdown of Malathion in water may result in products more toxic to aquatic organisms than the parent compound.

32. On October 24, 1984, a spill of acrylamide occurred due to a operator failure during a transfer from bulk storage to a railcar located near Building 70. The exact amount spilled is unclear, possibly about 3000 gallons. Most of the spill went to pans located under the rail cars, some spilled onto the ground and some entered the storm drains. Contaminated soil and gravel was removed and acrylamide was pumped from storm drains. Non-pumpable material was reportedly neutralized.

33. On January 4, 1985, a ruptured disc on a storage vessel located at the Building 123 tank farm caused the release of approximtely 1150 gallons of Dimethylphosphorochloridothionate (DMPCT), 800 gallons of which were contained in a dike, 300 gallons spilled onto the ground, and 50 gallons were released to the atmosphere. Contaminated soil was drummed for disposal in a landfill.

34. On January 14, 1985, an oleum leak occurred at the Sulfuric Acid Plant due to a pinhole leak on a steel pipe which recirculates oleum between the oleum tower and the pump tank. This leak was discovered due to a grayish cloud which extended about twenty five (25) feet above the ground. Flow was then diverted to a second pipeline which also had a pinhole leak which dripped oleum onto the ground. This discharge was neutralized. Upon investigation into whether this incident was related to the July 11, 1982 spill of sulfuric acid, the EPA contractor discovered that in the DPCC plan, Cyanimid states that acid resistant asphalt paving would be installed in the Sulfuric Acid Plant and Sulfur Recovery Area to prevent any hazardous substances from entering the waterway. The EPA contractor found the spill area to be covered by blue road stone and not by acid resistant asphalt paving. At the time of the June 1987 site inspection by NJDEP/BPA, the Sulfuric Acid Plant was being demolished. It is not known whether acid resistant asphalt was ever installed.

35. On January 21, 1985, a vapor release occurred from tank No. 170-3 in Building 69 due to the malfunction of a temperature monitoring device and subsequent rupture of the vessel's pressure disc. This tank contained the organophosphate insecticide Cygon 400 which is comprised of 55% dimethoate and 45% organic solvents (35% cyclohexanone, 9% petroleum distallate and emulsifier). The release was estimated to be 4700 pounds of the material (567 gallons). Dimethoate is a white crystalline solid with a mercaptan odor. Four Cyanamid workers sought medical attention due to the release as a result of nausea, a common symptom due to overexposure to Cygon. Complaints were received from Staten Island, Brooklyn, and Nassau County, Long Island concerning skunk-like odors in the air and the experiencing of headaches, nausea, vomiting, and general irritation.

    Brooklyn Union Gas Company of Brooklyn New York expressed concern over these and other similar releases to the Director of EPA Region II in a letter dated May 7, 1985. According to the letter, Brooklyn Union received nearly 650 complaints regarding this incident. The letter indicates that such releases have impacted their operations in the past. They received numerous odor complaints in January and February 1975 which coincided with the start up of Cyanamid's "Counter" Process. The complaints ceased when operations were halted. The process was restarted a second time and excessive complaints were received in October, November, and December 1975 and continued through January 29, 1976 when the "Counter" process was again shut down. Further incidents occurred during June through September 1976 when they received an enormous amount of complaints on dates which directly corresponded to problems experienced when charcoal filter systems failed, or while barging process effluent out to sea. On November 11, 1977, the company received 3500 odor complaints from residents of Staten Island and Brooklyn. On this day Cyanamid had again restarted the "Counter" process. Finally, NJDEP intervened and ordered a permanent cessation of the process.

36. On February 15, 1985, Cyanamid was issued a Field Record of Violation for the operation of the acid center flare without it being lit, thereby causing the release of approximately eighty (80) pounds of hydrogen sulfide to the atmosphere.

37. On April 12, 1985, approximately 1300 gallons of 50% sodium hydroxide solution (8000 pounds of sodium hydroxide) was discharged onto the ground from caustic soda storage tank TA-130-1 located in the Cygon Department. The contaminated area was neutralized with 12% acetic acid solution.

38. On April 24, 1985, Malathion storage tank TA-54 overflowed during a transfer operation due to operator error. Approximately 600 gallons of 95% pure Malathion overflowed, 500 gallons of which were contained within a dike surrounding the tank. The remaining 100 gallons spilled onto the gravel covered ground. Contaminated soil and gravel were collected into 55 gallon drums for disposal.

39. On June 6, 1986, a chemical fire (type unknown) produced a plume which extended south to Carteret and resulted in numerous odor complaints.

40. On September 2, 1986 at 0955, 150 gallons of calcium cyanide powder

was spilled in Building 47 during the removal of equipment. The spill was confined in the area of the chemical sewer. Air monitoring undertaken by American Cyanamid, using Dregger tubes, indicated levels of 30 parts per million (ppm) cyanide inside the building and 2 to 4 ppm outside. The area was evacuated and the material was drummed. On that same day, at 1700, the same type of spill occurred except in a larger (unknown) quantity. This second spill resulted in the death of twenty (20) pigeons which were roosting in the rafters of the building.

In response to the numerous incidents which have resulted in the release of chemical air contaminants in the New Jersey, New York Area, the Department of Environmental Protection issued an Administrative Consent Order in 1985, which outlined steps in which American Cyanamid must evaluate and implement an Environmental Accident Risk Assessment. This Assessment is still in progress at this time.

41. On May 11, 1987, an unknown amount of No. 2 fuel oil was reported to have spilled from an underground tank. The leak was discovered when the underground tank failed the leak rate test.

42. On July 24, 1987, over 100 pounds of organic hazardous waste (D001) was sprayed onto the ground and the Arthur Kill. The release was caused by a weld failure on an overhead transfer line.

GROUNDWATER ROUTE

No site specific information geology or hydrogeology exists. The geology of the area is characterized by fill to a depth of approximately ten feet, and clay meadow mat in some areas, which are underlain by glacial till deposits consisting of layers and lenses of silt, sand, and clay. The bedrock of the Brunswick Formation is encountered at approximately twenty feet. The water table at the Cyanamid plant is very high.

There are currently no monitoring wells or production wells on site.

Land use surrounding the facility is predominantly industrial. A survey of wells within a five mile radius of the site indicate use for potable water supply and industrial uses. The nearest off site well is located within four miles and is owned by Decorator Plastics Inc. of Elizabeth. The quality of water from this 570 foot deep well, drawing from the Brunswick Formation, is unknown.

Four wells owned by the Elizabethtown Water Company lie within 4.6 to 5.0 miles of the facility. These wells all tap the Brunswick Formation ranging in depth from 325 to 350 feet. According to the Water Company, these wells have been taken out of service due to problems with the water quality.

Five wells owned by the City of Rahway lie within 4.8 to 5.0 miles of the site. Three of these wells tap the Brunswick Formation while the other two tap the stratified drift of the Pleistocene Age, all wells ranging in depth from 50.5 to 135 feet in depth. These wells pump to the distribution system supplying potable water for the City of Rahway.

SURFACE WATER ROUTE

The Warners Facility is bounded to the east by the Arthur Kill and to the

south by the Rahway River, which empties to the Arthur Kill. Both bodies of water have been impacted by operations at American Cyanamid.

As outlined previously, numerous spills and releases have been discharged to one or both of these water bodies. The Arthur Kill discharges to the Raritan Bay approximately seven miles south of the facility. Other nearby surface water bodies in the vicinity include Marshes Creek and Deep Creek to the west, Piles Creek and Necks Creek to the north, and Rum Creek to the south. These streams are all tributaries of the Rahway River and the Arthur Kill.

The Cyanamid facility discharges, via separate sewer systems, both storm water and cooling water to both the Arthur Kill and the Rahway River. Both discharge types are regulated by NJPDES Permit number NJD0001058. Four discharges, designated 00A through 00D, release an effluent which consists mainly of storm runoff and non-contact cooling water at an approximate rate of thirty four million gallons per day. An oil skimmer which treats a portion of one discharge, is the only presently existing treatment unit on the facility. Additional storm water is released through eight storm drains designated 01 through 08. The Warners Plant is classified as a major facility by the EPA.

On February 25, 1972, a Consent Final Judgement was entered into by NJDEP and the American Cyanamid Company. Under the terms of this Consent Judgement, outfall 1 (which was later consolidated with other outfalls into outfall 00A) was to be the only outfall discharging effluent other than non-contaminated cooling water. Discharge and manufacturing operations were ordered to cease until such time as they were in compliance. Previous sampling medicated a servere toxicity in bioassays performed, high biochemical oxygen demand and suspended solids loading, high petroleum ether soluble matter, and objectionable odors.

The Warners Plant manufactured guanidines, which was a major source of cyanide wastewaters, until 1981. Numerous notices of non-compliance were registered prior to shut down regarding the concentrations of total cyanide discharged from an onsite cyanide treatment plant. Cyanamid contended that the majority of cyanide present was complex metal cyanide salts rather than free cyanide and petitioned to have the permit limitations amended. The cessation of the guanidine manufacturing process predated any decision concerning any permit amendment.

An Administrative Consent Order (ACO) dated May 26, 1983 directed Cyanamid to complete programs which were already addressing non-compliance with their NJPDES permit. Additionally, they were to address areas containing unlabeled and deteriorating drums as well as inadequate containment facilities which allowed chemical spills to flow to permitted and non-permited outfalls.

In May 1985, NJDEP Office of Science and Research conducted outfall and intake sampling for both bioassay and Ames Testing. Analytical data for the Ames Tests indicated weakly positive results in the process water effluent (outfall 00B), while the composite sampling of outfalls 00A, 00C, and 00D were negative. The bioassay indicated compliance with permit limitations.

As required under the Warners Plant's NJPDES permit, the eight storm drains were sampled from February to July 1985. The results indicated elevated levels of pesticides, volatile organics, metals, cyanides, and phenols. Since this time, no further sampling has occurred.

Since at least as early as January 28, 1986, the Office of the Attorney General has been investigating the illegal discharges of pollutants by Warners Plant to the Rahway River and/or the Arthur Kill in the following manner: (a) through holes in the floor of Building 69, (b) by the use of the devices known as steam siphons or steam eductors in Building 69, (c) by accidential discharges of chemical products from Building 69 through rupture discs, (d) by the accidental release of 6800 gallons of crude Malathion on October 6, 1984, some of which entered the Rahway River, and (e) by the accidental discharge of pollutants through holes in pipes located adjacent to the outside of Building 69. Through this investigation, the office uncovered at least thirty seven negligent discharges of pollutants without a NJPDES permit for the period from May 1982 to November 1985. The exact chemical composition of each negligent discharge was impossible to determine. This investigation resulted in a Criminal Action Suit to which American Cyanamid pled quilty on June 12, 1987 and were fined $900,000.00.

On January 28, 1986, members of the Division of Criminal Justice and NJDEP executed a search warrant at the plant. Samples were taken from inside and underneath Building 69. In the outgoing tide, the sampling team observed a distinct plume of gray colored water flowing from the underside of the building in the dark green river water. Analytical data indicated elevated levels of organics, alcohols, sulfides, and phosphous from samples taken inside the building and elevated levels of organics, total sulfur, sulfide, phosprous, and pesticides (malathion) from samples taken the underside of the building.

The primary usage of the Arthur Kill classified as TW-3 waters, is that of industrial usage and navigation with some recreational navigation. The Rahway River is used industrially as well, with some recreational usages (i.e. fishing, boating, swimming) in upstream locations.

The site was built upon wetlands and lies within the Rahway River and Arthur Kill drainage basins.

The potential exists for runoff to the surface waters due to nearly the entire facility being asphalt covered.

AIR ROUTE

Air sampling episodes took place in response to the release of Malathion on October 6, 1984. The rupture of a storage tank caused approximately 7000 to 8000 gallons of malathion to be released into the atmosphere over a period of approximately two hours. The plume traveled southeasterly over the Rahway River towards Staten Island, N.Y., Woodbridge, Carteret, Perth Amboy, Sayreville, and Old Bridge, N.J. Samples downwind were collected by NJDEP and the Middlesex County Health Department. Forty nine community samples were analyzed by American Cyanamid while an additional twenty five community samples were analyzed by ETC Corporation, Edison. The test results indicated that the Malathion concentrations were highest within approximately two miles of the site. The Center for Disease Control

indicated that there were no health hazards associated with the obtained levels of Malathion.

As indicated previously, there have been extensive complaints regarding odors associated with releases and operations at the Warners Plant.

In response to the numerous incidents which have resulted in the release of chemical air contaminants in the New Jersey/New York area, the Department of Environmental Protection issued an Administrative Consent Order in 1985, which outlined steps in which American Cyanamid must evaluate and implement an Environmental Accident Risk Assessment. This assessment is still in progress at this time.

Throughout the history of operations at the Warners Plant, 362 air permits have been issued to American Cyanamid. Of these, approximately 80 permits are currently active, regulating process tanks, storage tanks, flares and baghouses.

SOIL

There have been no soil sampling episodes conducted at this facility. The facility is almost entirely asphalt covered. However during spills and releases which have occurred, contaminated soils have been removed. The potential exists for contaminated soil to remain as a result of spillage, due to the various degrees of integrity of the asphalt paving.

DIRECT CONTACT

With the exception of airborne releases, there is little potential for off-site populations to come in direct contact with substances at the Warners Plant. Access to the site is regulated by 24 hour security guards through a secured fence. As stated previously, there exists an extensive history of odor complaints and air releases of chemical contaminants. This replete history resulted in an Administrative Order being issued requiring the implementation of an Environmental Accident Risk Assessment.

In addition to the general nuisance of odors, there have been several reports of illnesses. The release of a sulfuric acid cloud in August 1983, caused three people in a nearly industrial establishment to become ill.

The release of Malathion through a ruptured tank on October 6, 1984 caused several health related impacts. The Middlesex County Health Department collected six soil samples in the Carteret area. All samples were negative for Malathion except for the Pactank Atlanta facility where results were 17 ppb. Similarly six water samples (presumably surface water samples) were collected in the area of Carteret. Two of these samples tested positive for Malathion at levels of 0.0025 ppb and 0.0049 ppb. These may have been a potential for direct contact with these soils or waters.

Twenty of sixty patients who had blood samples collected as a result of this incident had elevated cholinesterase levels which may have been the result of exposure. Sixty five people were examined at other hospitals and one was admitted as a result.

Twenty nine crew members from nearby ships were directly exposed to the plume which was released and were hospitalized as a result. The plume

continued in a southeasterly direction reaching into Monmouth County. At least 160 people were hospitalized in New York.

On January 21, 1985, the vapor release of the organophosphate insecticide CYGON 400 resulted in over 3500 complaints from nearby residents experiencing headaches, nausea, vomiting, and general irritation. Additionally four Cyanamid workers sought medical attention as a result of the release.

FIRE AND EXPLOSION

There have been numerous expolosions/ruptures of vessels at this facility. These incidents have been discussed previously. The potential exists, due to the nature of materials handled on site, for further fires and explosions.

ADDITIONAL CONSIDERATIONS

Due to the extensive history of spills, ruptures, and other releases, there is documented unstable containment of waste.

There exists the potential for damage to fauna and for the contamination of the food chain. Effluent testing in the 1960s and 1970s indicated a severe toxicity in bioassay testing. Additionally, due to the close proximity of the Arthur Kill and the Rahway River and the numerous releases to both, the potential exists that aquatic organisms may be affected. The breakdown products of Malathion in water may result in products more toxic and persistant than the parent compound. This may indicate a major concern to aquatic organisms.

There has been documented damage to off-site property. During the release of Malathion on October 6, 1984, two ships in the Arthur Kill were contaminated. These ships were washed down with sea water as the contamination level was determined to be low.

American Cyanamid owns and operates 2 off-site landfills, both of which are inactive, and an off-site warehouse. None of these facilities are contiguous with the main facility, with one landfill located in Carteret and the other landfill and the warehouse being located in Linden approximately 1.5 miles west of the plant.

ENFORCEMENT ACTIONS

Other than enforcement actions taken on spills previously mentioned, there have been three additional actions taken.

On November 25, 1986, an Administrative Order and Notice of Civil Administrative Penalty Assessment was issued to the Warners Plant. On April 9, 1986, and again on April 17, 1986, NJDEP inspectors were denied access to inspect the Cyanamid facility, specifically the NJPDES permitted facility in the vicinity of Building 69, in the area between discharges 007 and 008 to the Rahway River. This denial was in violation of both the company's NJPDES permit and the New Jersey Water Pollution Control Act. Additionally, effluent concentrations for June 1986 were exceeded for both total organic carbon and pesticides.

On July 6, 1987, an Administrative Order and Notice of Civil Administrative Penalty Assessment was issued with respect to findings during the course of a routine inspection by NJDEP on June 16, 1986. The Order indicates that

Cyanamid had complied with the majority of the violations noted that day namely waste analysis plan discrepancies, improper management of hazardous waste containers (failure to segregate, improper aisle space, poor container integrity), failure to remedy deteriorations or malfunctions of equipment or structure on a schedule to ensure that the problem has not lead to other hazards, inspection log discrepancies, and contingency plan discrepancies. Two violations were not addressed namely manifest discrepancies, and the employment of processes (solidification) not specified on their Part A application.

An inspection conducted by NJDEP in December 1987, revealed many of the same conditions to be present and violations were issued. Reinspection of the facility in February 1, 1988 revealed that the violations had been satisfactorily addressed.

PRIORITY DESIGNATION

Due to the extensive history of release to air, surface water, soil, and potentially ground water, the site is given a medium priority for assessment.

RECOMMENDATIONS

American Cyanamid Warners Plant has an extensive history of spills, releases, and odor complaints. The following actions are recommended for this facility.

1. An investigation should be conducted to address all structures which extend over either the Arthur Kill or the Rahway River to insure that no discharge pathways exist which may allow contaminants to enter these surface waters.

2. Sampling should occur at the eight storm sewer systems which discharge to both the Rahway River and the Arthur Kill. These were sampled from February to July 1985, and were found to contain elevated levels of pesticides, volatile organics, metals, cyanides, and phenolics. Since that time no further sampling has occurred.

3. Soil borings should be taken throughout the plant to determine the occurrence and extent of soil contamination.

4. A monitoring well network should be established at the facility to detemine if contamination of the ground water exists.

5. Measures should be taken to control odors which originate from production processes at the facility.

Submitted by:

Clare P. Sullivan
NJDEP/Bureau of Planning and Assessment
June 1988

Hours Worked: 30

American Cyanamid - Fisco - For Cyanamid file

Linden Plant

# The BOROUGH of HIGHLAND PARK

*County of Middlesex, State of New Jersey*

21 SOUTH FOURTH AVENUE
HIGHLAND PARK, NEW JERSEY 08904
TEL. (201) 572-3400

Harrel-Fujarski
Dewling
cc: Smith/ACTION
Metzger
Morales-Sanchez
Marshall

response due 10/10/80

RECEIVED
OCT 03
Director, S&A Division

September 15, 1980

Mr. Charles S. Warren
Regional Administrator
U.S. Environmental Protection Agency, Region II
26 Federal Plaza
New York, N. Y. 10278

Dear Mr. Warren:

Thank you for your letter dated June 19 regarding our concerns about our water supply. We found your letter informative and appreciate your statement of interest. However, we raise the following points:

1. We continue to be concerned about the lateral movement of contaminants from the waste lagoons into the river. In particular, we are focussing attention on the strip of land (shaded red in the enclosed map) between the lagoons and the river. We urge that a series of test borings be drilled to determine (A) the direction of water movement under this land, and (B) the presence or absence of contaminants in this area.

Because of a number of factors, including the size of the lagoons, the unknown condition of the lagoons' lining, the unknown nature of the lagoons' contents, the geology of the area and the proximity of the lagoons to the river, we believe that the risk of contaminant migration must be addressed more fully.

2. While we applaud the implementation of various monitoring programs at the state and federal level, we are uncertain about the value of such programs in this case. For a monitoring program to be effective in this instance, analyses would have to include those compounds contained in the Cyanamid lagoons. To date, we have had no indication of what these compounds are (other than aniline), but probably most of them are not included in existing monitoring programs.

The value of conducting annual or quarterly analyses is questionable, in this case. Such a schedule would certainly not detect the occurrence of a spill upstream. Is it feasible to begin monitoring at a frequency which will provide adequate protection for the water supply ?

3. The issue of spills is a troublesome one. Inspection of the site revealed the presence of a small tributary (shaded green on the enclosed map)

passing to the west of the lagoon and entering the Raritan. Since the stream apparently passes near Cyanamid's carbon filtration system, it seems likely that spilled chemicals in the area may enter the stream. We urge a visual examination of the site to assess the relationship of the stream to the waste processing activities.

The shutdown of Elizabeththown's intake presumes that any spill at Cyanamid will be immediately detected and that Elizabethtown will be notified in time to avert contamination of the supply.

4. What, if any, federal regulations apply to Cyanamid's lagoons? Are they, for example, included in the NPDES permit system? If so, can we obtain any information regarding the structure or contents of the lagoons from federal documentation?

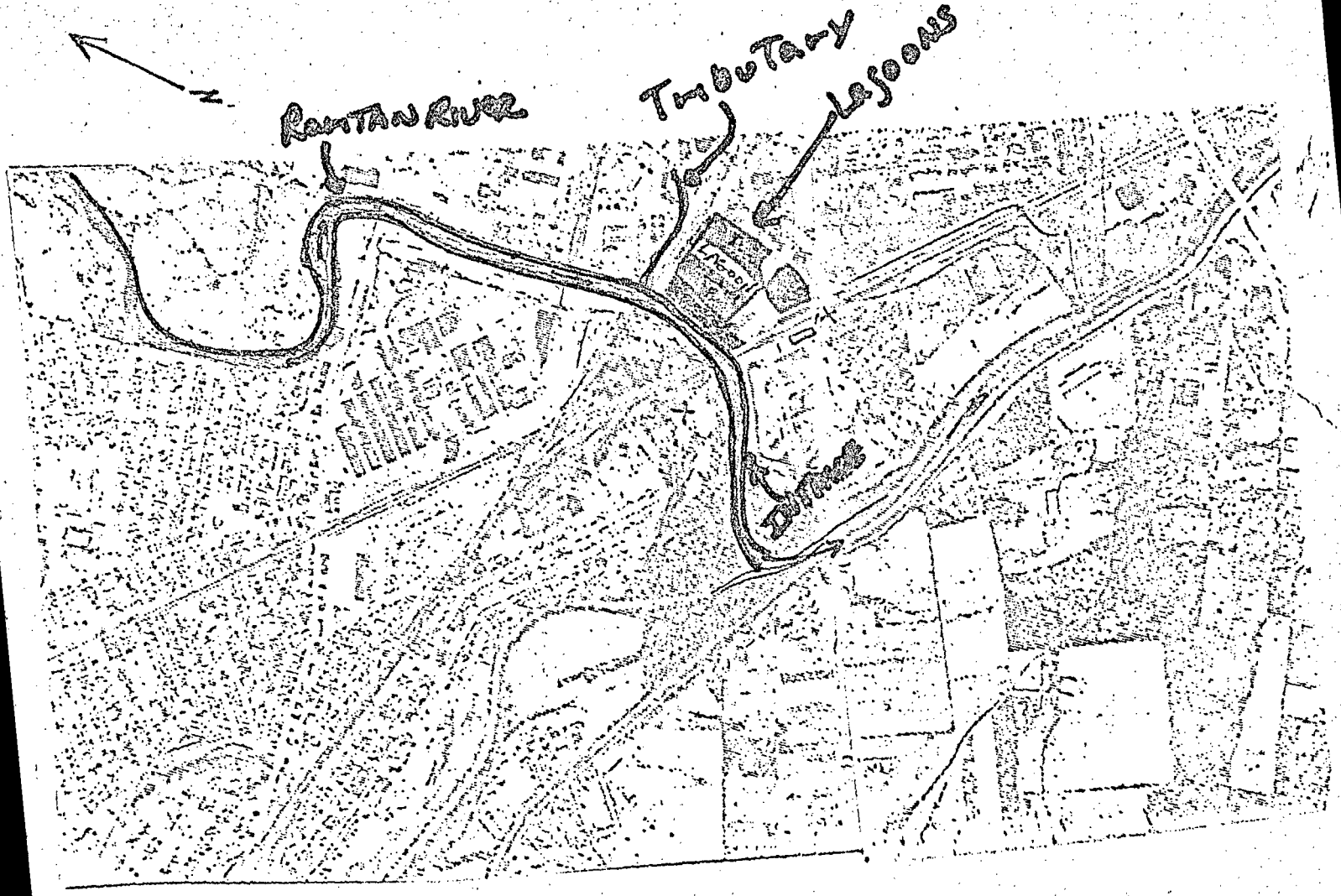
We believe that some additional actions must be taken to determine the nature of the threat these lagoons pose to our water supply. We would welcome the opportunity to meet with you and your staff to discuss further what steps may be taken.

Sincerely,

Eugene P. Young

Eugene P. Young
Chairman
Highland Park Environmental Commission

Cc: Mr. Alan MacIntosh
Highland Park Environmental Commission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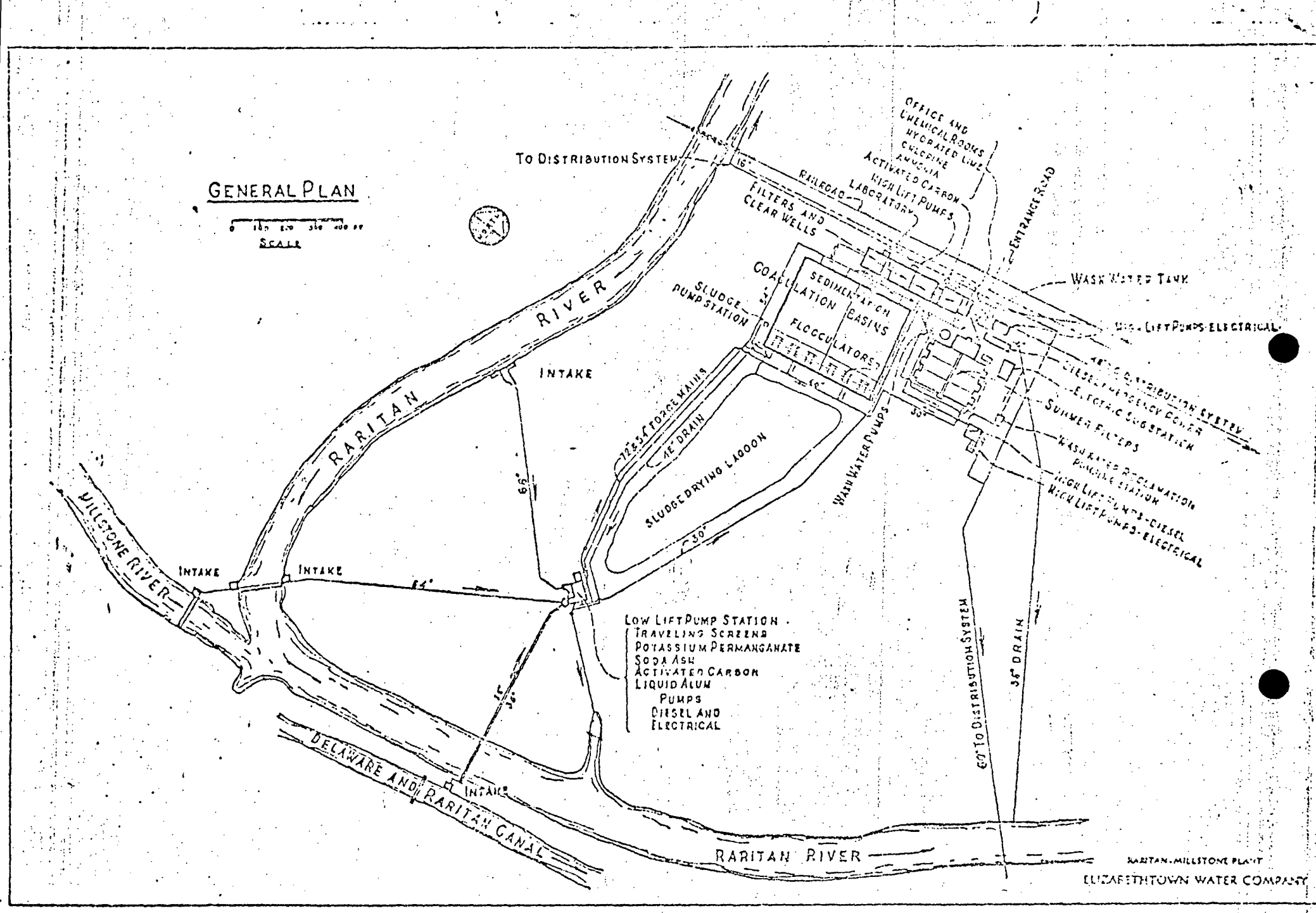
RARITAN RIVER
TRIBUTARY
LAGOONS
Lincoln
Bridge


GENERAL PLAN
Scale
TO DISTRIBUTION SYSTEM
OFFICE AND
CHEMICAL ROOMS
HYDRATED LIME
CHLORINE
AMMONIA
ACTIVATED CARBON
HIGH LIFT PUMPS
LABORATORY
RAILROAD
FILTERS AND
CLEAR WELLS
ENTRANCE ROAD
WASH WATER TANK
SLUDGE
PUMP STATION
COAGULATION
SEDIMENTATION
BASINS
FLOCCULATORS
HIGH LIFT PUMPS-ELECTRICAL
ABOVE DISTRIBUTION SYSTEM
DIESEL EMERGENCY COVER
ELECTRIC SUB STATION
SUMMER FILTERS
WASH WATER RECLAMATION
PUMPING STATION
HIGH LIFT PUMPS-DIESEL
HIGH LIFT PUMPS-ELECTRICAL
RARITAN RIVER
INTAKE
72"&54" FORCE MAINS
AE DRAIN
SLUDGE DRYING LAGOON
WASH WATER PUMPS
MILLSTONE RIVER
INTAKE
INTAKE
84"
66"
30"
LOW LIFT PUMP STATION
TRAVELING SCREENS
POTASSIUM PERMANGANATE
SODA ASH
ACTIVATED CARBON
LIQUID ALUM
PUMPS
DIESEL AND
ELECTRICAL
60" TO DISTRIBUTION SYSTEM
36" DRAIN
DELAWARE AND RARITAN CANAL
INTAKE
RARITAN RIVER
RARITAN-MILLSTONE PLANT
ELIZABETHTOWN WATER COMPANY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: September 18, 1980

SUBJECT: Hazardous Waste Site Program -
Preliminary Assessments and Site Inspections

FROM: John S. Frisco, Acting Chief
Hazardous Waste Site Program

TO: Richard D. Spear, Chief
Surveillance & Monitoring Branch

Enclosed are potential hazardous waste site identification forms for those sites indicated on the attached list. EPA has lead responsibility for all of the sites under our partnership agreement with New Jersey.

The sites are among those where insufficient information is available to enable us to complete the preliminary assessment forms. Further, they represent the only inactive sites in New Jersey on EPA's list which have not yet been assessed. As we have discussed, it may be appropriate to utilize FIT staff for this task.

Please arrange to have preliminary field inspections conducted and the associated 10 page reports returned to me, together with the completed preliminary assessment forms, for evaluation and input to the national hazardous waste site ADP tracking system. Copies of the assessment forms are enclosed.

Also, I believe this would be the appropriate time to begin utilizing the JRB methodology for rating all hazardous waste sites. FIT staff has already been exposed to the rating system in connection with a previous assignment related to Superfund. JRB work sheets and rating forms should be prepared for each of the sites on the attached list and submitted with the above assessment and inspection forms. Copies of the JRB methodology and associated forms are also enclosed.

If you have any questions, do not hesitate to contact me.

Attachments

cc: Barbara Metzger

PA Form 1320-6 (Rev. 3-76)

## HAZARDOUS WASTE SITES

1. Powers Farm
   Jackson, Ocean County, NJ

2. Kenilworth-Unnamed Paint Co.
   Kenilworth, Essex County, NJ

3. A. Gross & Co.
   Newark, Essex County, NJ

4. Volco Brass & Copper Co.
   Kenilworth, Essex County, NJ

5. Diamond Shamrock Corp.
   Jersey City, Hudson County, NJ

6. Allied Chemical Corp.
   Metuchen, Middlesex County, NJ

7. Koppers Co.
   Metuchen, Middlesex County, NJ

8. Koppers Co.
   Port Reading, Middlesex County, NJ

9. Chevron Chemical Co.
   South Plainfield, Middlesex County, NJ

10. Borden Chemical Co.
    Middlesex, Middlesex County, NJ

11. Tenneco Chemicals
    Garfield, Bergen County, NJ

12. Modern Transportation
    Carlstadt, Bergen County, NJ

13. Atlantic Industrial Tank Maintenance
    Camden, Camden County, NJ

14. Newark Disposal
    Newark, Essex County, NJ

15. PVSC Sanitary Landfill
    Newark, Essex County, NJ

16. Flexcraft
    Newark, Essex County, NJ

17. Central Steel Drum
    Newark, Essex County, NJ

18. Parker Laboratories
Orange, Essex County, NJ

19. N.H.A. Property
Newark, Essex County, NJ

20. Hercules
Gibbstown, Gloucester County, NJ

21. Tenneco Chemicals
Flemington, Hudson County, NJ

22. Air Products and Chemicals
Middlesex, Middlesex County, NJ

23. Freehold Sanitary
Freehold, Monmouth County, NJ

24. E.I. Dupont De Nemours Co.
Pompton Lakes, Morris County, NJ

25. Hayden Chemical
Manchester, Ocean County, NJ

26. Hayden Chemical
Jackson, Ocean County, NJ

27. Tenneco Chemical
Elizabeth, Union County, NJ

28. American Cyanamid
Linden, Union County, NJ

29. Merck & Co.
Linden, Union County, NJ

30. FMC Corp.
Carteret, Union County, NJ